1 Publishable summary

1.1 Project objectives

The objectives of the project are to develop a MEMS processing capability for the production of intelligent flexible fabrics/textiles. It will be composed of:

(1) Processes and inks for the deposition of layers on textiles
(2) A 3 and 5 sacrificial layer process for the thick film production of surface micromachined 3D MEMS on textiles and fabrics
(3) A sacrificial layer and additive layering process for the inkjet production of 3D MEMS on textiles and fabrics using inkjet printing
(4) Encapsulation process

1.2 Work performed since the beginning of the project

Work has been completed on the specification of the phase 1 and phase 2 prototypes, the ink/paste developments needed, the ink/paste specifications and the design of MEMS compatible with fabrics. The recommendations and summary of the Reach Directive was provided to all the partners in order to have the development of sustainable products. Preliminary ink jet and screen printing tests have been undertaken and an initial prototype has been realised. Ink/Paste development has been undertaken. The designs of the MEMs have been completed and summarised in deliverable D8.

1.3 Main results achieved so far

The main results so far are the specification of the phase 1 and phase 2 prototypes, the ink developments needed, the ink specification and all the MEMS designs. A number of bespoke inks and pastes have been realised. Preliminary ink jet and screen printing tests have been undertaken and an initial prototype has been realised. A structure, an actuator structure and a sensor structure have also been realised on a fabric.

1.4 Expected final results and their potential impact and use (including the socio-economic impact and the wider societal implications of the project so far*)*

We expect a family of inks/pastes proven to be compatible with the fabrics assessed in the project and potentially compatible with many other fabrics. We expect to demonstrate these ink/pastes on a range of application relevant to the end users in the project. These developments will have a positive economic impact through uptake of printing technology in other smart fabrics applications following the examples demonstrated in the project. There will be positive societal impact since the inks allow the achievement of socially beneficial smart fabrics (e.g. medical) whilst using the minimum of raw materials to achieve a positive environmental impact.

1.5 The project logo

1.6 Contact details

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1.7 Project public website

http://microflex.ecs.soton.ac.uk/